



Critical Care Therapy and Respiratory Care Section

Category:	Clinical
Section:	Equipment Processing
Title:	Equipment Decontamination and Disinfection
Policy #:	01
Revised:	03/00

1.0. DESCRIPTION

1.1 Definitions: *Decontamination* of equipment involves physical removal of potentially pathogenic microorganisms through a process which renders the equipment safe for handling, usually performed before any further treatment of the items is done. *Disinfection* reduces the numbers of potentially infectious microorganisms through physical or chemical means; disinfection does not guarantee destruction or removal of microbial spores. *Sterilization* is the complete destruction of all microorganisms, including spores.

1.2 Precautions:

- 1.2.1 Patients and/or hospital staff may become contaminated by improperly processed equipment.
- 1.2.2 Damage to or deterioration of equipment may result if handled roughly, or if procedure is not followed correctly.
- 1.2.3 Formation of tissue-toxic ethylene glycol may result if damp polyvinyl chloride products are ethylene oxide (ETO) gas sterilized.
- 1.2.4 *Universal Precautions guidelines must be followed throughout equipment processing procedures.*

1.3 Indications: All nondisposable direct and indirect patient contact equipment must be cleaned, and disinfected or sterilized, as appropriate, to prevent nosocomial transmission of infectious agents.

1.4 Contraindication: Disposable single-patient use items should never be processed for reuse.

2.0 EQUIPMENT/MATERIALS:

2.1 Pasteurization: Sterilization by heating items in a liquid bath at 62-72°C, then air dried in a controlled environment.

2.2 Ethylene oxide gas (ETO): hot or cold gas sterilization.

2.3 Disinfectants: These solutions may all be considered "high-level" disinfectants when the microorganism load is reduced to a minimum prior to disinfection, exposure time and concentration are adequate, and the equipment remains immersed without air pockets throughout the disinfection process.

2.3.1 6%-7% hydrogen peroxide

2.3.2 Sodium hypochlorite (e.g., household bleach diluted in a 1:10 solution or Dispatch)

2.3.3 Buffered peracetic acid

In general, at least 20 minutes of soaking in undiluted preparations of 6%-7% hydrogen peroxide is considered high-level disinfection. Soaking in a dilution of bleach of a 1:10 concentration with tap water (the solution should not be greater than 24 hours old) or use of Dispatch as per manufacturer's recommendations (see instructions on bottle) also constitutes high-level disinfection. For specific information on the use of any of these disinfecting agents, consult the Clinical Center Isolation Guidelines Flipchart or contact Hospital Epidemiology at 6-2209.

2.4 Cleanser: alkaline detergent powder

2.5 Utensils: brushes, cotton-tipped applicators, gauze sponges

2.6 Equipment containers:

2.6.1 Self-sealing blue envelopes in various sizes

2.6.2 Green gas bags in various sizes

2.7 Sterilization indicators (for steam and gas)

2.7.1 Gas tape

2.7.2 Steam and gas indicator tabs

2.8 Marking pens

2.9 Requisition forms

2.10 Universal precautions barriers

2.11 Soiled equipment

2.11.1 Semicritical items: those objects which contact mucous membranes or nonintact skin. These items must be free of all microorganisms except bacterial spores. These require at least high-level disinfection. Examples include manual resuscitators and masks, laryngoscope blades, bronchoscopy equipment, nondisposable mouthpieces, and reusable breathing circuits.

2.11.2 Noncritical items: items which offer minimal risk for nosocomial transmission of infection such as pressure and electrocardiographic monitoring cables and hardware, transducer poles and mounts, and pulse oximetry equipment. These require only low-level disinfection (decontamination with any of the approved disinfectants listed above).

3.0 PROCEDURE

3.1 Disinfection of nondisposable patient care items should be performed in the equipment processing dirty utility areas as follows:

3.1.1 Noncritical items:

3.1.1.1 Decontaminate using appropriate cleaning utensils, cleanser (if needed to remove soiling), and approved disinfectants.

3.1.1.2 Package the items as needed and remove to clean utility.

3.1.2 Semicritical items:

3.1.2.1 Before disinfection or sterilization, equipment must be washed thoroughly to remove organic material that might interfere with sterilization or disinfection.

3.1.2.2 The longer the exposure time to a disinfectant, the more likely that all microorganisms will be eliminated. Refer to the Clinical Center Isolation Guidelines Flipchart for specific information on processing times.

3.1.2.3 Immerse items in hydrogen peroxide or bleach solutions for an appropriate length of time, rinse with tap water, and set aside on sterile towels to air dry.

OR

Spray thoroughly with Dispatch, and let stand for a minimum of two minutes. No rinsing is required. Wipe the items dry with a dry cloth.

3.1.2.4 Package the items as needed and remove to the clean utility.

- 3.1.3 Nondisposable manual resuscitators:
 - 3.1.3.1 Perform initial cleaning on disassembled resuscitators.
 - 3.1.3.2 Place all parts in a bag labeled for pasteurization.
- 3.1.4 Bronchoscopes and related equipment should be processed as described in the Bedside Bronchoscopy Assistance Procedure.
- 3.1.5 Ventilators:
 - 3.1.5.1 Spray the exterior of ventilators with Dispatch, let stand for two minutes, and wipe dry.
 - 3.1.5.2 The nondisposable circuit parts are sterilized as in 3.1.6. below.
 - 3.1.5.3 Complete processing of ventilators according to the Ventilator Quality Control Check Procedure.
- 3.1.6 Sterilization of semicritical items:
 - 3.1.6.1 Internal parts of Siemens ventilators and other nondisposable circuit components:
 - 3.1.6.1.1 Clean debris from these items prior to further processing.
 - 3.1.6.1.2 Pasteurize in Pasteurmatic.
 - 3.1.6.2 Items for ethylene oxide sterilization:
 - 3.1.6.2.1 Clean items prior to packaging for gas sterilization.
 - 3.1.6.2.2 Place cleaned, **dried** items in appropriate blue self-sealing envelopes with a gas sterilization indicator tab, and seal with gas indicator tape.
 - 3.1.6.2.3 Send items with a requisition slip (triplicate form) to Central Sterile Supply. The requisition slip should note the item(s) to be processed, 10D MICU or 2C642, the date, and therapist's name. Retain the blue copy of the requisition slip in the STAT Lab for inventory control purposes.

4.0 POST PROCEDURE

- 4.1 All equipment sent to Central Sterile Supply should be picked up without undue delays and placed in the clean utility area. Discard the blue requisition copy when all noted items have been retrieved.
- 4.2 Dispose of soiled cleaning supplies according to Universal Precautions. Maintain a "clean" equipment processing area.

5.0 CHARTING

Follow the appropriate documentation procedures described for bronchoscope processing and ventilator processing according to the Bedside Bronchoscopy Assistance Procedure and the Ventilator Quality Control Check Procedure, respectively.

6.0 REFERENCES

- 6.1 Garay SM, Plottel CS. Nosocomial Transmission. In: Clinics in Chest Medicine 1988;9(3):519-533.
- 6.2 Clinical Center Isolation Guidelines Flipchart
- 6.3 Operation Manual, Pasteurmatic

SIGNATURE: _____
Assistant Section Chief, CCTRCS, CCMD

DATE: _____

SIGNATURE: _____
Section Chief, CCTRCS CCMD

DATE: _____

SIGNATURE: _____
Medical Director, CCTRCS CCMD

DATE: _____

(Orig 11/20/89)
(Rev 12/89, 4/92, 9/94, 11/95, 3/00)